ADDENDUM. Since this article went to press another case has been reported by Türck (*Zeitschrift f. innere Medicin*, No. 13, p. 336), under the title "Acute Myeloid Leukæmia." The duration was not stated. The blood findings were: hæmoglobin, 19 per cent.; erythrocytes, 1,060,000; whites, 42,000. The leucocytes consisted of 14 per cent. lymphocytes, 32 per cent. polynuclears, 47 per cent. myelocytes. Postmortem the bone-marrow was of grass-green color, and was made up almost exclusively of neutrophile myelocytes and transitional forms.

BIBLIOGRAPHY.

Billings. Transactions of the Association of American Physicians, 1900.
Ebstein. Deutsch. Arch. Allg. Med., Band. xliv. p. 343, 1889.
Ehrlich and Lazarus. Nothnagel's Spec. Path. und Therapie, 1901.
Ewing. Clinical Pathology of the Blood, 1901, p. 212.
Fränkel. Deutsch. med. Woch., vol. xxxi. p. 639, 1895.
Fussell, Jopson, and Taylor. Philadelphia Medical Journal, January, 1899.
Grawitz. Pathologie des Blutes, 1902, p. 318.
Hirschfeld and Alexander. Berl. klin. Woch., No. 11, 1902.
Hirschlaff. Deutsch. Arch. f. klin. Med., vol. lxii. p. 314.
Leube. Berl. klin. Woch., p. 851, 1900.
Michaelis. Zeitschr. f. klin. Med., vol. xlv. p. 87, 1902.
Naegeli. Deutsch. med. Woch., May 3, 1900.
Obrastow. Ibid., p. 1150, 1890.
Pappenheim. Virchow's Arch. f. Path. Anat. und Phys., vol. clix. p. 161.
Pinkus. Nothnagel's Spec. Path. und Therapie, 1901.
Reimann. Wien. klin. Woch., p. 967, 1899.
Seelig. Deutsch. Arch. f. klin. Med., vol. liv. p. 537.
Thompson and Ewing. New York Medical Record, vol. liii. p. 333, 1898.
Van der Wey. Deutsch. Arch. f. klin. Med., p. 287, 1896.
Walz. Centralb. f. Pathologie und Allg. Anat., No. 23, 1901.

TUMOR OF THE INTERCAROTID BODY.

A REPORT OF ONE CASE, TOGETHER WITH ALL CASES IN LITERATURE.

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FIVE cases of tumor of the intercarotid body are recorded in medical literature. Paltauf[1] reports four of these with a most exhaustively systematic study of the structure, development, and pathology of the intercarotid body. Marchand records one case of tumor of this same intercarotid body. These five cases, with the one recorded in this paper, constitute all the known instances in medical experience. The case which I have to report is as follows:

The patient was a woman between twenty and thirty years old. The diagnosis had been made of an enlarged gland in the neck. There was no history of tuberculosis in the family. The woman was well developed and well nourished. For over nine years she had noticed a small bunch in the right side of the neck. This bunch had increased slightly in size and had become tender whenever she had a cold.

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[1] Beiträge path. Anat. Allgem. Pathologie. Ziegler, Jena, 1892.

Examination found upon the right side of the neck, in front of the middle third of the sternomastoid muscle, and lying partly in the submaxillary and superior carotid triangles, a firm, non-fluctuating, non-tender tumor, the size of a pigeon's egg. The tumor was slightly movable from side to side. The skin was movable over the tumor. Pulsation was felt, but no expansile impulse noted.

FIG. 1.

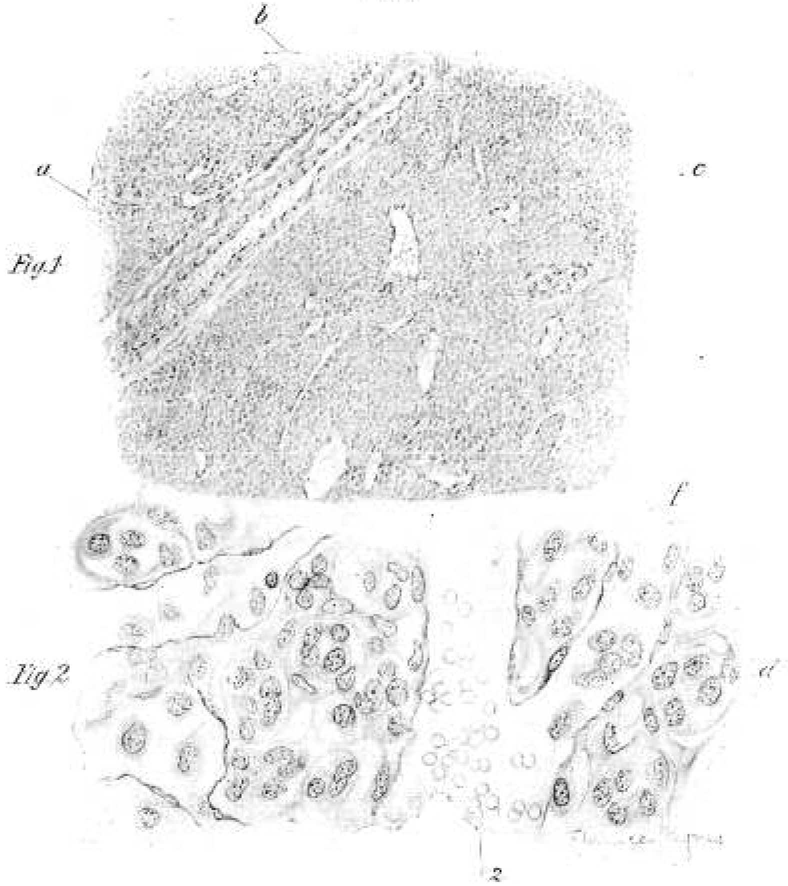


FIG. 1. *a*, tumor cells; *b*, endothelial cells seen lining the blood space; *c*, tumor cells.
FIG. 2. *d* and *f*, tumor or parietal cells: 2, red cells of the blood within the vascular space.

Operation. Incision over the tumor. It was uncovered, and found to be highly vascular. Blood oozed from it when touched with the forceps. The common carotid artery was continuous with the sheath of the tumor. The tumor could not be separated from the artery. The common carotid was ligated above the anterior belly of the omohyoid in two places, and divided between the ligatures. After the ligation of the common carotid the oozing continued, and a ligature was placed about both the internal and external carotids, for it was now evident that the tumor was intimately connected with these two vessels. Upon placing this ligature the oozing ceased, and the tumor was removed with the vessels. (See Fig. 3.) The patient recovered without incident from the operation. She complained of some sore throat the following day. The temperature rose to 99.2° F.; the pulse gradually declined from 110 to 80; the respiration dropped from 25 to 20. There has been no recurrence after thirteen months.

FIG. 2.

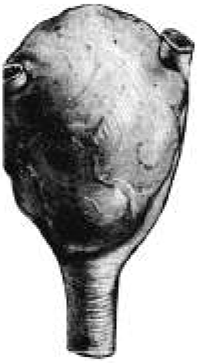
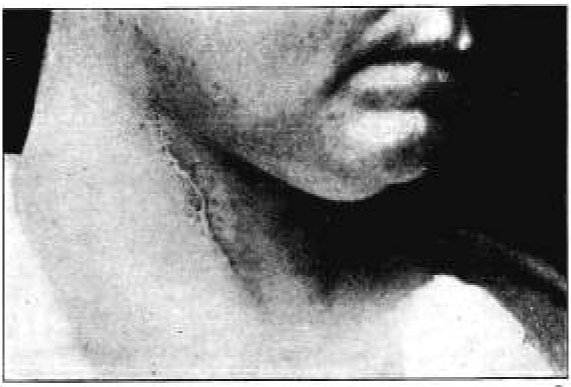


FIG. 3.



Cicatrix after removal of intercarotid tumor.

Microscopic examination showed the growth to be traversed by a series of large, thick-walled vessels, evidently arteries. Between these large vessels lay the proper tumor tissue, which was composed of large, round, and spindle cells, with but little appearance of intercellular substance, and traversing it in all directions were blood channels, in many cases lined with but a single layer of endothelial cells. (See Figs. 1 and 2.)

The cells of the tumor mass seemed in places to have distinctly originated in the tissue about these small vessels.

The *diagnosis* is best described as a variety of angiosarcoma, known as perithelioma. W. F. WHITNEY, M.D.

In each of the six cases the tumor was situated in the fork of the common carotid artery. It had so developed that neither the internal nor the external carotid could be separated from it. The tumor could be separated from the surrounding tissue, but not from the vessels.

The tumor was more or less circumscribed by a connective tissue capsule. It was nourished by vessels arising from the carotids directly. The tumor appeared in the superior carotid triangle and lower part of the submaxillary triangle. It rarely became larger than a hen's egg. I was mistaken for an ordinary lymphoma or an aneurism.

These tumors are not without danger. They may grow to large size, and become destructive in character to surrounding tissues.

In one case the vessel wall had been so invaded as to cause secondary hemorrhage.

In one case, on the fifth day following the operation, there appeared hemiplegia, right facial and hypoglossal paralysis, together with aphasia. The patient recovered from all the paralyses. The aphasia was the last to disappear.

Two years after the operation there had been no return of the growth.

In another of these cases a slight paresis of the left vocal cord remained for some time. Four years after the operation there was no return of the tumor, and the patient was well.

In one of the cases recorded there was a return of the tumor one year following operation. The recurrent tumor was removed, but was not recorded or examined.

Marchand's case is reported as follows. It resembles closely the case recorded above:

Marchand's[1] case of a tumor of the intercarotid body occurred in a woman, aged thirty-two years, who had observed the mass for four and one-half years; it was on the right side. Up to the age of twenty-two years the patient had been an epileptic. After that she had suffered from severe headaches, though not especially on the right. She desired the operation, though she had never been troubled by the tumor. Her pupils were equal, the color on both sides of the face was equal, and there were no symptoms referable to the sympathetic. About the tumor, which was the size of a hen's egg, and under the angle of the jaw pulsation existed in all directions. A lymphoma was at first diagnosed.

At the operation the carotid was found to be so surrounded by and embedded in the tumor, which was fitted into the bifurcation, that to remove the mass it was necessary to tie off the vessels. The patient died on the third day of bronchopneumonia. The vagus was cut at the time of operation. Autopsy showed no metastases.

Microscopically. In many places the tumor tissue, consisting of great polyhedral cells, was directly in contact with the endothelium of the blood spaces with no tissue substance intervening. It seemed as if the whole tissue by a gradual disappearance of fibrillar substance and increase in cell elements was being transformed directly into foci of thickly crowded together cells.

The tumor cells accordingly must be held to originate from the subendothelium or perithelium. The great resemblance to epithelium of the groups of cells in the alveoli is due to their close crowding and their consequent flattening. It can hardly be doubted that the cell growth which led to the tumor formation must have originated from the cell elements forming the principal part of the single lobules or kernels of the little organ, and which enclose the numerous vessels like a thick mantle.

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[1] Festschrift f. Rudolph Virchow, Bd. i. S. 547.

The growth was doubtless malignant from the degenerative effect it exerted on the neighboring nerve trunks, and from the formation of small, gray nodes of cellular outgrowth which projected into the lumen of the carotid, in spite of the fact that the tumor was in general sharply marked off from its surroundings.

"I have not given a name to the tumor, because I know of none which exactly fits. One would seem most justified, in view of its structure and etiology, in calling it an alveolar angiosarcoma."

The main interest of the peculiar growth doubtless lies in its origin from the characteristic elements of a structure which in man at least seems to possess the significance of a rudimentary organ.

The tumor was the size of a hen's egg, 5.5 x 3.8 x 3.5 cm. It completely enclosed the carotid, which bifurcated in its midst. On section it was seen that the internal carotid soon after being given off was much narrowed and thrombosed. Through the growth passed the sympathetic, which showed degenerative pressure changes. The vagus passed down to one side, and the hypoglossus through the tumor.

The peculiar relation of the tumor mass to the trunk and main branches of the carotid made one suspect that this unusual growth could have originated from no other structure than the so-called glandula carotid. The near relation to the sympathetic spoke also in favor of this etiology. Examination of the cross-section made this seem even more probable, since no glandula carotid could be found in its normal position, and, furthermore, the porous, apparently oldest portion of the growth next to the internal carotid occupied the exact position of that little structure.

For this reason the other side of the neck was examined and the glandula carotid was found in its normal position in the carotid notch, the size of a kernel of corn.

A word as to the histological findings of the intercarotid body will be of interest, as so little is generally known of its structure.

Paltauf finds that the intercarotid body is surrounded by a thick, partly fibrillated, partly homogeneous, connective tissue mass, which contains much elastic tissue and groups of fat cells, and which passes over into the neighboring connective tissue between the external and internal carotid.

From this connective tissue there are numerous projections between the lobules and the glomeruli, forming a net about them.

The same richly cellular masses which Arnold found in the connective tissue of the coccygeal gland are also found here in the connective tissue about the nerves of small vessels. The cells are at times round, at times long and more spindle-shaped, and consist of a very large nucleus containing fat and a narrow border. They are in rows or groups on both sides of the vessel, and in the meshes of the capillaries, and also in those projections of tissue which envelop the lobules and glomeruli, and the fat contained makes them appear not unlike ganglion cells.

The intercarotid body lies in the cellular tissue on the posterior border of the fork of the common carotid, and is turned more toward the internal carotid, receiving its blood supply from the common carotid.

Low-power microscope shows a compact fibrous capsule which is easily separated from the loose cellular tissue surrounding it, and contains numerous vessels and nerves. From this capsule go off projections of various size, which enter the gland and surround the lobules. These lobules are varied in number and size; for example, if large, only three appear in the greatest cross-section; generally there are only four or five such in the whole organ, while if they are small there may be ten or twelve.

Kartschenko found that the intercarotid body developed from an outgrowth of the adventitia of the carotid, and that a thymus nodule had been mistaken for this intercarotid gland.

Paltauf agrees fully with Kartschenko.

In the human embryo of about 15 mm., in which the thyroid layers were still joined to the pharynx epithelium, Paltauf could find no trace of the carotid gland except a slight thickening of the adventitia of the carotid. He could, however, find no trace of epithelium in the location where the carotid gland would later develop.

In an embryo 4 cm. long the carotid gland had begun to develop at the division of the carotid. It was still surrounded by adventitia and appeared as an ovoid (in cross-section round) body, plainly differentiated from the vessels. It lay in the posterior and somewhat inner part of the external carotid, more or less embedded in its adventitia; it consisted of very cellular connective tissue, and already contained numerous vessels which branched off from proportionately large branches of the external carotid.

Prompt recognition of the existence and relations of the tumor of the intercarotid body will facilitate a complete and immediate removal of the growth, together with the larger vessels.

A STUDY OF THE PHYSICAL SIGNS OF LOBAR PNEUMONIA.[1]

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AND

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Among the cases of primary lobar pneumonia admitted to the wards of the Hudson Street Hospital between the years 1896 and 1902 there

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[1] Read at a meeting of the New York Society of Internal Medicine, January 21, 1903.